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Biokhimiya, Vol 35, No 2, Mar-Apr 70, pp 425-435

(Moscow) dealt with the role of aminoacyl-t-RNA-synthetases in the synthesis of aminoacyl-t-RNA. t-RNA synthetases specific for methionine, formylmethionine, serine, lysine, and phenylalanine have been identified. A report by R. I. SAGLANIK (Novosibirsk) reviewed work on the suppression of the synthesis of virus nucleic acids by nucleases. Animal experiments showed that administration of DNA-ase prevented the death of mice infected with the viruses of tick-born encephalitis, influenza, and foot-and-mouth disease and made guinea pigs insusceptible for a certain length of time to infection with foot-and-mouth disease. The nucleases did not produce any toxic effects. Application of nucleases in the treatment of human virus diseases showed that they were effective in herpetic keratites, adenovirus conjunctivites, tick-born encephalitides, herpes zoster, and other diseases. At present DNA-ase for the treatment of these diseases is being produced industrially. Its application for 4 yrs at major foci of tick-born encephalitis in Siberia yielded very good results. Research is being continued on the use of nucleases in the treatment of virus diseases of farm animals. In the symposium on the biochemistry of membranes, P. G. KOSTRYUK (Kiev) in a report dealing with the transfer of ions in connection with the generation of excitation potentials by nerve cells expressed the opinion that the action of nerve impulse transmitters

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Biokhimiya, Vol 35, No 2, Mar-Apr 70, pp 425-435

is associated not only with changes in membrane permeability, but also involves a direct effect producing transfer of cations. This was confirmed in a paper by A. A. BOLDYREV (Moscow), who found that acetylcholine inhibited the active transfer of Ca^{++} in a sarcoplasm reticulum fraction. The inhibition was exerted on ATP-ase, which brings about transfer of Ca^{++}, and presumably constituted an effect that makes possible the transfer of Ca^{++} from the reticulum during excitation. Boldyrev pointed out that in view of the localization within muscle cells of the enzymes that regulate acetylcholine metabolism, this effect produced by acetylcholine may be directly related to its functioning as an intracellular regulator of excitation processes. Reports given by members of the Kiev school of biochemists (A. V. PALLADIN, O. V. KIRSENKO, G. L. VAVILOVA, M. K. MALYSHEVA, and others) had a bearing on the functioning of Na-K - activated transport ATP-ases in membranes. I. I. IVANOV (Leningrad) found that ATP gelated sarcoplasm proteins of skeletal muscles, whereas Ca^{++} liquefied the gel that formed. He assumed that a reversible gelation produced in this manner is responsible for the plastic tonus of smooth and striated muscles. In a resolution passed by the Congress, progress in biochemical research was reviewed. It was stated that the membership of the Biochemical Society increased from 3500 to 6500 between the First and Second Congress. Institutes of Proteins, Photosynthesis, and Physiology and Biochemistry

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Biokhimiya, Vol 35, No 2, Mar-Apr 70, pp 425-435

of Microorganisms were organized within the Academy of Sciences USSR. It was pointed out that it is necessary to conduct more intensive research in several fields including the structure of proteins in relation to their functional activity, biochemical genetics, and (in view of the importance of this field from the standpoint of solution of general problems of biochemistry) the biochemistry of microorganisms and viruses.

USSR

UDC: 577.153.35

DEBORIN, G.A., YANOPOL'SKAYA, N.D., and OPARIN, A.I., Academician, Institute of Biochemistry imeni A.N. Bakh, Academy of Sciences USSR, Moscow

"The Effect of Substrate and Competing Ribonuclease Inhibitors on Ribonuclease Transfer Across an Artificial Lipid Membrane in a Model System"

Moscow, Doklady Akademii Nauk SSSR, Vol 190, No 3, Jan 70, pp 720-721

Abstract: The experimental apparatus consisted of chambers A and B separated by a membrane. Chamber A was filled with a mixture of an enzyme and competing inhibitor, and chamber B with distilled water. The system was kept for 3 hrs at 37°C, then the enzyme content in chamber B was determined by the Fiers and Stocks method. RNA, heparin and mononucleotides obtained by treating RNA with ribonuclease were used as competing inhibitors. Separate experiments have shown that neither of these components acts destructively on the lipid membrane. It was determined that these materials facilitate passage of the enzyme molecules across the membrane. It was postulated that the formation of a complex enzyme-competing inhibitor leads to a conformation of enzyme protein facilitating its transport in the form of a labile compound with membrane lipids.

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Acc. Nr. AT0101937 Abstracting Service: CHEMICAL ABST. 5-70 Ref. Code UP0020

107335b **Effect of the presence of substrate and inhibitors of ribonuclease on its transport through a synthetic lipid membrane in a model system.** Deborin, G. A.; Yanopol'skaya, N. D.; Oparin, A. L. (Inst. Biokhim. im. Bakha, Moscow, USSR). *Dokl. Akad. Nauk SSSR* 1970, 190(3), 720–1 [Biochem] (Russ). Formation of an RNase–substrate–inhibitor complex (with RNA, a mixt. of mononucleotides, or heparin) favored RNase transport through model lipid membranes. This verifies previous predictions that formation of the Michaelis complex is important in the mechanism of RNase transport to its substrate through the lipid membrane. BJJR

EO

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REEL/FRAME
19851893

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USSR

UDC: 681.332.65

OPARIN, V. V., Leningrad Institute of Aviation Instrument Building

"A Decimal Counter"

USSR Author's Certificate No 289515, filed 24 Jul 69, published 18 Feb 71 (from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 10, Oct 71, Abstract No 10B237)

Translation: The proposed circuit belongs to the class of decimal scaling devices and can be used in operation on high frequencies. Most conventional decimal counters are constructed on the basis of series connected flip-flops with a count input. The speed of such circuits cannot be faster than that of an individual flip-flop; therefore, in order to increase the speed of a decimal counter it is necessary to construct the circuit in such a way that the actual working frequency of any flip-flop is less than the input frequency. In order to accomplish this, the device must be designed so that not one of the flip-flops is reset by two successive input pulses. This is utilized in a double ring counter; however, the number of flip-flops in such a counter is increased to five. Another method is possible for reducing the actual working frequency of flip-flop operation: building a circuit with

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USSR

OPARIN, V. V., Soviet Patent No 289515

simultaneous carry which operates in a special code. The data published in the literature enable construction of a circuit of this type, as there are examples of the appropriate codes available at the present time and methods have been developed for synthesizing circuits with simultaneous carry for any given code. However, the presence of multiple-pass logic circuits is a considerable impediment to practical use of counters constructed on the above-mentioned principle. The purpose of the invention is to develop a decimal counter circuit which works in a special code and is free of the above-mentioned disadvantages. This purpose is accomplished by utilizing artificial, composite, quadristable elements operating in Grey code constructed from the flip-flops as the elementary cells of the counter rather than using the flip-flops taken separately. In the overall circuit of the counter, sequential and simultaneous carry are used together. In order to construct a composite, multistable flip-flop element, it is necessary to put one diode at each input of the flip-flops which go to make up the element. The input circuits of the flip-flops can often be used as these diodes. In order to produce a binary counter circuit from such multistable elements, it is necessary to add one more diode at the circuit input. Thus a decimal

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OPARIN, V. V., Soviet Patent No 289515

counter in which each flip-flop operates with a frequency which is at least twice as low as the input frequency contains four flip-flops (i.e., the minimum number possible for a decimal counter) and nine diodes having a single controlling input.. One illustration.

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USSR

OPARIN, V. V.

UDC: 621.374.32

"Counter with an Adjustable Scaling Factor"

USSR Author's Certificate No 251274, Filed 6 Feb 67, Published 12 Feb 70 (from RZh-Avtomatika, Telemekhanika i vychislitelnaya tekhnika, No 9, Sep 70, Abstract No 9B302P)

Translation: This Author's Certificate introduces an economical counter circuit in which the scaling factor can vary within the limits of 2^n-2^{n+1} for n flip-flops. In each bit of the counter there is a 2-input coincidence circuit connected by one input to the output of the bit flip-flop and by the second input to the device for assigning the scaling factor. The outputs of all the coincidence circuits are joined by a common OR circuit connected to the single input of the controlling flip-flop, by means of which the feeding of input pulses to the counter can be inhibited. The magnitude of the scaling factor is established in binary code. There is one illustration.

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1/2 015 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--POTENTIOMETRIC TITRATION OF MOLYBDOSILICIC ACID -U-

AUTHOR-(02)-DOROKHOVA, YE.N., OPARINA, L.I.

COUNTRY OF INFO--USSR

SOURCE--ZH. ANAL. KHIM. 1970, 25(3), 544-7

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--POTENTIOMETRIC TITRATION, MOLYBDENUM COMPOUND, SILICON COMPOUND, ORGANOTIN COMPOUND, NAPHTHOL, SULFONIC ACID, ASCORBIC ACID

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3005/0004 STEP NO--UR/0075/70/025/003/0544/0547

CIRC ACCESSION NO--AP0132304

UNCLASSIFIED

2/2 015 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0132304

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. POTENTIOMETRIC TITRN. OF THE ALPHA FORM AND BETA FORM OF MOLYBDOSILICIC ACID WITH SNC SUB2 O SUB4.2H SUB2 O, 1,AMINO,2,NAPHTHOL,4,SULFONIC ACID (I), AND ASCORBIC ACID WAS STUDIED. POTENTIAL JUMPS WERE OBSERVED WHEN BOTH FORMS WERE TITRATED WITH SNC SUB2 O SUB4 OR WHEN THE BETA FORM IS TITRATED WITH I. THE AMT. OF TITRANT VARIES IN DIRECT PROPORTION TO THE SI CONCN. THE TITRN. WITH I IS PREFERRED BECAUSE IT IS STABLE AND IN AIR IT CAN BE USED WITHOUT CO SUB2. THE TITRN. IS CARRIED OUT AT AN ACIDITY FORMING THE YELLOW FORM AND IT PREVENTS THE PARTIAL DESTRUCTION OF MOLYBDOSILICIC ACID. ADJUST AN ALIQUOT. CONTG. 0.5-50 MG SIO SUB2 TO 2 WITH N H SUB2 SO SUB4, THEN ADD 2 ML 10PERCENT AMMONIUM MOLYBDATE, AND AFTER 10 MIN DIL. TO 50 ML. TITRATE WITH I. FACILITY: MOSCOW STATE UNIV., MOSCOW, USSR.

UNCLASSIFIED

1/2 015 UNCLASSIFIED PROCESSING DATE--11SEP70

TITLE--HYDRAULIC RESISTANCE OF A LAYER OF HYDROLYZED LIGNIN -U-

AUTHOR--KOROTOV, S.YA., OPARINA, L.V., SUKHANOSKIY, S.I., AKHMINA, YE.I.

COUNTRY OF INFO--USSR

SOURCE--GIDROLIZ. LESOKHIM. PROM. 1970, 23(1) 11-12

DATE PUBLISHED--------70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR, BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--LIGNIN, GLUCOSE, INDUSTRIAL WASTE TREATMENT, CARBON PRODUCT, HYDRAULIC RESISTANCE, HYDROLYSIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1989/0211 STEP NO--UR/0328/70/023/001/0011/0012

CIRC ACCESSION NO--AP0106867

UNCLASSIFIED

2/2 015 UNCLASSIFIED PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0106867

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE HYDRAULIC PROPERTIES WERE DETD. EXPTL. OF THE UNCOMPRESSED LAYERS OF HYDROLYZED HCL LIGNIN (WASTE PRODUCT OF GLUCOSE MANUF.), HYDROLYZED H SUB2 SO SUB4 LIGNIN, AND CHARCOAL MADE FROM LIGNIN. AL MATERIALS WERE EITHER GRANULATED OR POWD. IN THE LAMINAR FLOW REGION, THE EQUATION DELTAP EQUALS (W PRIME2-2) LA-D SUBE R SUBE AND IN THE TURBULENT FLOW RANGE, THE EQUATION DELTAP EQUALS (W PRIME2-2 (LA-D SUBE) (A-R SUBE PLUS B) WERE OBEYED; DELTAP IS THE PRESSURE DROP (HYDRAULIC RESISTANCE) THROUGH A LAYER OF THICKNESS L, W IS THE AV. FLOW VELOCITY, RHO IS THE D. OF THE FLOWING GAS, T SUBE IS THE REYNOLDS NO. RELATED TO A IN THE LAMINAR FLOW RANGE BY A EQUALS LAMBDAR SUBE AND IN THE TURBULENT FLOW RANGE BY LAMBDA EQUALS A-R SUBE PLUS B, AND D SUBE IS THE EQUIV. DIAM. OF THE FREE SPACES (CANALS) OF THE SOLID LAYER. ALL THE PARAMETERS OF THESE EQUATIONS WERE DETD. IN THE 5-800 R SUBE RANGE, AND THE CRIT. R SUBE VALUES WERE DETD.

UNCLASSIFIED

USSR UDC: 621.373.531.1(088.8)

BATYRSHIN, D. M., GLADCHENKO, V. N., GRACHEV, G. F., OPESKIN, V. D., PANKOV, S. V.

"A Royer Generator"

USSR Author's Certificate No 267678, filed 15 Jun 68, published 5 Aug 70 (from RZh-Radiotekhnika, No 1, Jan 71, Abstract No 1G232 P)

Translation: This Author's Certificate introduces a Royer generator with provision for controlling the frequency of the generated pulses over a broad range. The transformer windings connected to the collectors of the transistors are shunted by a variable resistor.

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Single Crystals

UDC 669.28:559.374

USSR

YASTREBKOV, A. A., OPLESNIN, B. A., LUBENETS, V. P., KOSYREV, Yu. N., and YAKUTOVICH, M. V.

"The Annealing of Plastically Bent Molybdenum Single Crystals"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 31, No 4, Apr 71, pp 843-848

Abstract: Structural changes and kinetics of polygonization by annealing plastically bent single crystals of molybdenum of four orientations were investigated by X-ray and metallographic methods. It was found that the deformation character depends on the crystal orientation. Kinetics of substructural changes by isothermal annealing in the temperature interval of 1700°C to 2500°C and the extinguishing character of the growth of polygons are discussed. The investigation results are analyzed by reference to microstructures, topograms, and the established dependence of the change of the orientation angle of neighboring blocks on the aging time by isothermal annealing. Four illustr., five biblio. refs.

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USSR UDC: 621.391.8:519.27

IGNAT'YEV, A. N., OPOVKIN, V. I.

"Construction of a Physically Realizable Autocorrelation Function"

Tr. Kazan. aviats. in-ta (Works of the Kazan' Aviation Institute), 1970, vyp. 122, pp 9-17 (from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12A60)

Translation: The authors examine the problem of constructing an autocorrelation function with respect to a function (arbitrarily given on a finite interval) which in the general case is not realizable as an autocorrelation function. The power spectrum of the signal corresponding to the resultant function is determined, and from this spectrum, the spectrum of the signal being sought is found. One illustration, bibliography of six titles. N. S.

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USSR

UDC 65.012.1:519.2

BURKOV, V. N. and OPOYTSEV, V. I., Moscow

"A Metagame Approach to the Control of Hierarchical Systems"

Moscow, Avtomatika i Telemekhanika, No 1, Jan 74, pp 103 - 114

Abstract: The real economic situation of a central administration and a number of subunits can be considered a game in which one player sets the rules. To the extent that economic subunits have their own goals, they cannot be relied upon to conform completely to the purposes of the central administration or to supply completely accurate information. Although the classical games theory does not enable us to select the type of solution in this type of situation which is most satisfactory from the viewpoint of the controlling player, various external considerations indicate that the Nash point equilibrium is an appropriate goal. The controlling player thus attempts to set the rules such that his payoff at the Nash point will be maximized, with the provision that the equilibrium at that point should be globally stable. This is illustrated using a fairly simple model of the distribution of a one-dimensional resource; in the general case the problem is extremely complex.

Under stable or relatively stable conditions in which the central administration invests its resource where the best return can be obtained, it can be shown that competition will lead the subordinate units to provide increasingly accurate

information about their capacities. If the central administration adopts what is called a "minimum reasonable management" strategy, the equilibrium point will ultimately tend to be the maximum return point. Improving the strategy beyond the minimum does not lead to a significantly better ultimate result.

1/3 023 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--MEDICAL ASPECTS OF THE PROBLEM OF REST -U-

AUTHOR-(02)-DANILOV, YU.YE., OPPENGEYM, D.G.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, SOVETSKOYE ZDRAVOOKHRANENIYE, RUSSIAN, NO 3, 1970, PP 54-57
DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--PUBLIC HEALTH, FATIGUE, PREVENTIVE MEDICINE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3005/0713 STEP NO--UR/0753/70/000/003/0054/0057

CIRC ACCESSION NO--AP0132816
UNCLASSIFIED

2/3 023 UNCLASSIFIED

CIRC ACCESSION NO--AP0132816 PROCESSING DATE--27NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN THE CPSU PROGRAM, THE DIRECTIVES OF THE TWENTY THIRD CONGRESS FOR THE FIVE YEAR PLAN OF DEVELOPMENT OF THE NATIONAL ECONOMY IN THE 1966-1970 PERIOD, AND IN A NUMBER OF DECREES OF THE CC CPSU AND THE COUNCIL OF MINISTERS USSR MUCH ATTENTION IS PAID TO THE ORGANIZATION OF LARGE SCALE REST OF THE PUBLIC, TO THE CONSTRUCTION OF HEALTH RESORTS AND TOURIST CENTERS, AND ALSO TO CONSERVATION OF NATURE IN SUBURBAN REST ZONES AND AT HEALTH RESORTS. THIS IS NOT ACCIDENT. THE ORGANIZATION OF LARGE SCALE REST FOR THE WORKERS AND MEMBERS OF THEIR FAMILIES IS AN IMPORTANT SOCIAL WELFARE, MEDICAL AND ECONOMIC PROBLEM, WHOSE SOLUTION IS EXTREMELY IMPORTANT TO PREVENTIVE MEDICINE AND TO THE FURTHER STRENGTHENING OF THE HEALTH OF THE SOVIET PEOPLE. THE PROBLEM OF REST HAS ASSUMED PARTICULARLY SERIOUS IMPORTANCE WITH THE ESTABLISHMENT OF THE 5 DAY WORK WEEK WITH TWO FREE DAYS. THE SPECIFIC SOCIAL WELFARE FEATURE OF SOLVING THE PROBLEM OF REST IN THE USSR, AS DISTINGUISHED FROM THE CAPITALIST COUNTRIES, LIES IN THE FACT THAT THE CONSTRUCTION AND MAINTENANCE OF THE REST ESTABLISHMENTS OF THE SOVIET PEOPLE ARE BASED ON THE USE OF SOCIAL CONSUMPTION FUNDS, SOCIAL INSURANCE FUNDS, THE SPECIAL FUNDS OF INDUSTRIAL ENTERPRISES, AND KOLKHOZ FUNDS. THE REST AND TOURIST ESTABLISHMENTS BUILT IN THE YEARS OF SOVIET POWER AND USED BY MILLIONS OF PEOPLE HAVE PLAYED AN IMPORTANT ROLE IN PREVENTION OF DISEASE, IN IMPROVING PHYSICAL DEVELOPMENT, AND IN STRENGTHENING HEALTH. BUT THE PRESENT NETWORK OF THESE ESTABLISHMENTS IS NOT MEETING THE GROWING NEEDS OF THE PUBLIC FOR ORGANIZED REST.

UNCLASSIFIED

3/3 023 UNCLASSIFIED PROCESSING DATE--27NOV70
CIRC ACCESSION NO--AP0132816
ABSTRACT/EXTRACT--FACILITY: CENTRAL INSTITUTE OF HEALTH RESORT SCIENCE AND PHYSIOTHERAPY.

UNCLASSIFIED

1/2 022 UNCLASSIFIED PROCESSING DATE--02OCT70
TITLE--VERTICAL PROFILES OF LONG WAVE RADIATION FLUXES IN A CLOUDY ATMOSPHERE -U-
AUTHOR-(03)-GOISA, N.I., OPPENGEIM, V.D., FEYGELSON, E.M.

COUNTRY OF INFO--USSR

SOURCE--AKADEMIIA NAUK SSSR, IZVESTIIA, FIZIKA ATMOSFERY I OKEANA, VOL 6 FEB 1970, P 198-203
DATE PUBLISHED-------70

SUBJECT AREAS--ATMOSPHERIC SCIENCES

TOPIC TAGS--LONG WAVE RADIATION, VERTICAL PROFILE, RADIATION FLUX, ATMOSPHERIC CLOUD, ATMOSPHERE, RADIATIVE HEATING, RADIATIVE COOLING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1989/1905 STEP NO--UR/0362/70/006/000/0198/0203

CIRC ACCESSION NO--AP0108235
UNCLASSIFIED

2/2 022 UNCLASSIFIED PROCESSING DATE--020CT70

CIRC ACCESSION NO--AP0108235

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MEASUREMENT OF UPWARD AND DOWNWARD LONG WAVE RADIATION FLUXES UNDER CLOUDY CONDITIONS DURING DAYTIME AND NIGHTTIME HOURS. A SHARP CHANGE IN THE DOWNWARD FLUX UPON ENTRY INTO THE CLOUDY LAYER FROM ABOVE IS NOTED, WHILE THE PROFILE OF THE UPWARD FLUX IS EVERYWHERE SMOOTH. ON THE BASIS OF 25 VERTICLE PROFILES OF THE EFFECTIVE RADIATION IN THE CASE OF SINGLE LAYER STRATUS CLOUDS, A MODEL OF THE RADIATION TRANSPORT IN AN AVERAGE STRATUS CLOUD IS CONSTRUCTED. IT IS SHOWN THAT THE RADIATION FLUX DIVERGENCE IN THE ATMOSPHERE ABOVE THE CLOUD IS SIMILAR TO THE DIVERGENCE UNDER CLEAR SKY CONDITIONS. WITHING THE CLOUD, THE MOST ACTIVE AREA FROM THE RADIATION STANDPOINT IS THE UPPERMOST 50 M LAYER. IN THYUNDERLYING 50 M LAYER THE RADIATION FLUX DIVERGENCE DECREASES FIVEFOLD. CONSIDERABLE RADIATIVE COOLING PENETRATES DOWN TO 150 M. THEN FOLLOWS A LAYER WHERE THE FLUX DIVERGENCE IS CLOSE TO ZERO. FINALLY, NEAR THE LOWER BOUNDARY OF THE CLOUD RADIATIVE HEATING IS OBSERVED.

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--11SEP70

1/2 005

TITLE--CONCERNING THE DETERMINATION OF THE INTERNAL PARAMETERS OF SYNCHRONOUS MACHINES -U-

AUTHOR--OPRISAN, P.

COUNTRY OF INFO--RUMANIA

SOURCE--ELECTROTEHNICA, 1970, VOL 18, NR 4, PP 129-133

DATE PUBLISHED-------70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.

TOPIC TAGS--SYNCHRONOUS GENERATOR, IMPEDANCE, PARAMETER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1988/1251 STEP NO--RU/9002/70/018/004/0129/0133

CIRC ACCESSION NO--AP0106032

UNCLASSIFIED

2/2 005 UNCLASSIFIED PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0106032

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE POSSIBILITY IS PRESENTED OF DETERMINING THE OPERATIONAL REACTANCES AND THE INTERNAL PARAMETERS OF THE SYNCHRONOUS MACHINES BY THE METHOD OF THE TRANSIENTY RESPONSE IN THE CURRENT, AFTER THE TWO AXES, TO THE UNITARY GRADIENT OF THE FEEDING VOLTAGE. THE DETERMINATION OF A GREAT NUMBER OF PARAMETERS OF THE MACHINE BY A RELATIVELY SIMPLE WAY REPRESENTS THE ESSENTIAL ADVANTAGE OF THE PROCEDURE WHICH CONSTITUTES A SYNTHESIS OF THE STATIC AND DYNAMIC METHODS KNOWN, AND APPLIED AT PRESENT.

UNCLASSIFIED

1/2 021 UNCLASSIFIED PROCESSING DATE--11SEP70

TITLE--MATHEMATICAL DESCRIPTION OF THE THERMAL CONTACT PREPARATION OF HYDROGEN -U-

AUTHOR--OPRISHKO, A.A., AMERIK, B.K., ZHOROV, YU.M., PASKUDSKAYA, L.A., YAKUNIN, O.V.

COUNTRY OF INFO--USSR

SOURCE--KHIM. TEKHNOL. TOPL. MASEL 1970, 15(3), 38-40

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--THERMODYNAMICS, THERMAL DECOMPOSITION, METHANE, ETHANE, ETHYLENE, ACETYLENE, INDUSTRIAL PRODUCTION, HYDROGEN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1990/2039 STEP NO--UR/0065/70/015/003/0038/0040

CIRC ACCESSION NO--AP0109971

UNCLASSIFIED

2/2 021 UNCLASSIFIED PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0109971

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PROCESS OF DECOMPN. OF A CH SUB4-C SUB2 H SUB6-C SUB2 H SUB4-C SUB2 H SUB2 MIXT. IN CONTACT WITH AL SUB2 O SUB3 HEAT CARRIERS WAS DESCRIBED BY 11 EQUATIONS INCLUDING MATERIAL AND THERMAL BALANCES. THE EQUATIONS WERE RESOLVED BY THE RUNGE KUTTA METHOD AT VARIOUS TEMPS. OF THE HEAT CARRIER IN THE LOWER PART OF THE REACTOR AS A FUNCTION OF THE REACTOR TEMP. THE THERMAL EQUIL. OF THE GAS AND HEAT CARRIER STREAMS WAS ESTABLISHED IN 0.05 M, THE TEMP. DIFFERENCE BEING REDUCED TO LESS THAN OR EQUAL TO 4DEGREESK. THE DECOMPN. OF CH SUB4 WAS INTENSIVE AT SIMILAR TO 1500DEGREESK, AT WHICH THE TEMP. DIFFERENCE OF THE STREAMS INCREASED TO 30DEGREESK.

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202310011-9"

USSR UDC 681.142.624:506.2

OPRISHKO, V. S., ROMANOV, S. P.

"A Plastic Neuron Model"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 3, Jan 71, Author's Certificate No 291202, Division G, filed 28 Mar 66, published 6 Jan 71, pp 119-120

Translation: This Author's Certificate introduces a plastic neuron model based on memistors. The model contains n input devices, a reference voltage oscillator, and series-connected amplifier and output circuit. As a distinguishing feature of the patent, computation of the optimum weights of input signals is automated and the circuit is simplified by adding phase detectors with some of their inputs connected through a transformer to the corresponding inputs of the circuits of the model, while the other inputs of the phase detectors are connected to the secondary windings of the transformer connected in the collector circuit of the amplifier. The outputs of the phase detectors are connected through limiting resistors to the controlling electrodes of the corresponding memistors.

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1/2 051 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--MECHANICAL AND THERMOMECHANICAL PROPERTIES OF POLYIMIDE FIBERS -U-

AUTHOR-(05)-OPRITS, Z.G., KUDRYAVTSEV, G.I., KORZHAVIN, L.N., GINZBURG, B.M., FRENKEL, S.YA.
COUNTRY OF INFO--USSR

SOURCE--KHIM. VOLOKNA 1970, (3), 61-4

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS, PHYSICS

TOPIC TAGS--SYNTHETIC FIBER, POLYIMIDE RESIN, PLASTIC MECHANICAL PROPERTY, PYROMELLITIC ACID, ORGANIC SULFUR COMPOUND, ETHER, TENSILE STRENGTH, ELECTRON BOMBARDMENT, UV RADIATION, NYLON, POLYESTER RESIN, CRYSTALLINE POLYMER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY FICHE NO----FD70/605012/E03 STEP NO--UR/0183/70/000/003/0061/0064

CIRC ACCESSION NO--AP0140306

2/2 051 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0140306

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EXPTL. FIBERS HERE PREPD. BY THE POLYCONDENSATION OF PYROMELLITIC DIANHYDRIDE WITH (P,H SUB2 NC SUB6 H SUB4) SUB2 O, (P,H SUB2 NC SUB6 H SUB4) SUB2 S, OR P,C SUB6 H SUB4 (OC SUB6 H SUB4 NH SUB2 P) SUB2 AND SPINNING THE RESULTING POLY(IMIDE ETHERS) OR THIOETHERS. THE FIBERS RETAINED THEIR INITIAL TENSILE STRENGTH AT BREAK (SIGMA) AFTER HEATING IN THE AIR AT 200DEGREES FOR 216 HR, AND LOST SIMILAR TO 30PERCENT SIGMA UNDER THE SAME CONDITIONS BUT AT 300DEGREES. THE FIBERS RESISTED BOILING IN 10PERCENT H SUB2 SO SUB4 AND HCL SOLNS. FOR GREATER THAN OR EQUAL TO 100 HR. THE ALK. SOLNS. AND CONCD. ACIDS DEGRADED THEM. THE FIBERS RESISTED THE BOMBARDMENT WITH FAST ELECTRONS OR UV IRRADN. BETTER THAN NYLON 6 OR POLYESTERS. X RAY DIFFRACTION SHOWED THAT THE FIBERS WERE/CRYST.

UNCLASSIFIED

USSR UDC: 618.664.066

OPRYA, V. Ya., SMETANKINA, N. P., VALETDINOV, R. K., Institute of Chemistry of High-Molecular Compounds, Kiev

"Polyurethane Coatings Which Contain Phosphorus"

Kiev, Khimicheskaya Tekhnologiya, No 1(61), Jan/Feb 72, pp 54-36

Abstract: In order to determine the possibility of reducing the flammability of polyurethane lacquer compositions, the authors investigate the effect of adding various quantities of tri(hydroxymethyl)phosphine to compositions based on a copolymer of tetrahydrofuran with propylene oxide combined with polyisocyanate. The optimum combination of physical and mechanical properties is observed in coatings using equimolar amounts of tri(hydroxymethyl)phosphine and polyester. Films with a phosphorus content of 0.035-0.25% are self-quenching.

USSR

UDC 911.3.616.981.452(574)

LAVROVSKIY, A. A., KUCHEROV, P. M., OPTYAKOVA, A. F., ROZHKOV, A. A., DEREVYANCHENKO, K. I., MATSUGA, V. G., BAKHTIGOZIN, I. A., ROZHKOV, A. A., CHIKRIZOV, F. D., KARUSHIN, P. A., and DUBYAGIN, P. S.

"Survival of Plague Bacteria During Interepizootic Years in the Sands Focus Area Between the Volga and Ural River"

V sb. Probl. osobo opasn. infektsiy (Problems of Especially Dangerous Infections -- collection of works) Vyp. 4 (14). Saratov, 1970, pp 94-104 (from RZh-Meditsinskaya Geografiya, Separate Issue, No 4, Abstract No 4.36.93)

Translation: A list is presented of reasons for the abrupt decrease in epizootic activity in the sands plague focus between the Volga and Ural Rivers. Plague bacteria, however, did not disappear from the biocenotic focus system, as evidenced by the epizootics of 1962-1963 and 1966 and the isolated cases of isolation of bacterial cultures from gerbils during depressed phases of focus life. It becomes more and more evident that the phenomenon of microfocality is an indispensible attribute of existence of plague bacteria in the biocenosis. Materials on landscape adjustment of particularly stable plague epizootics facilitate the definition, in the

USSR

LAVROVSKIY, A. A., et al., Probl. osobo opash. infektsiy (Problems of Especially Dangerous Infections — collection of Works) Vyp. 4 (14). Saratov, 1970, pp 94-104 (from RZh-Meditsinskaya Geografiya, Separate Issue, No 4, Abstract No 4.36.93)

Volga-Ural sands area, of several more significant regions where the plague pathogen apparently survives even during depressed phases of focus activity.

1/1

2/2

AA0046267 UR 0482

Soviet Inventions Illustrated, Section III Mechanical and General, Derwent, 2-70

•Z42947 IMPROVEMENT TO VEHICLE SPRINGS (ot Authors Cert. No. 213096) made up of resilient components one on top of the other, with separating layers and held in pairs between upper and lower plates. The upper plate has a projection which is a sliding fit in a transverse aperture in the upper resilient component which bears on the separating layer via a cup fitted to it. The bottom of the cup has an aperture coaxial with the projection on the upper plate. The distance between the end of the projection to the separating layer is not equal to the distance between the lip of the cup to the lower plate. To give greater elasticity to the separating layer the bottom of the cup and the plates are tapered and have equidistant surfaces.

5.3.68 as 1224227/27-11 add to 213096 K.K. ORAGVELIDZE (17.9.69) Bul. 16/5.5.69. Class 20d, Int. Cl. B 61f.

18

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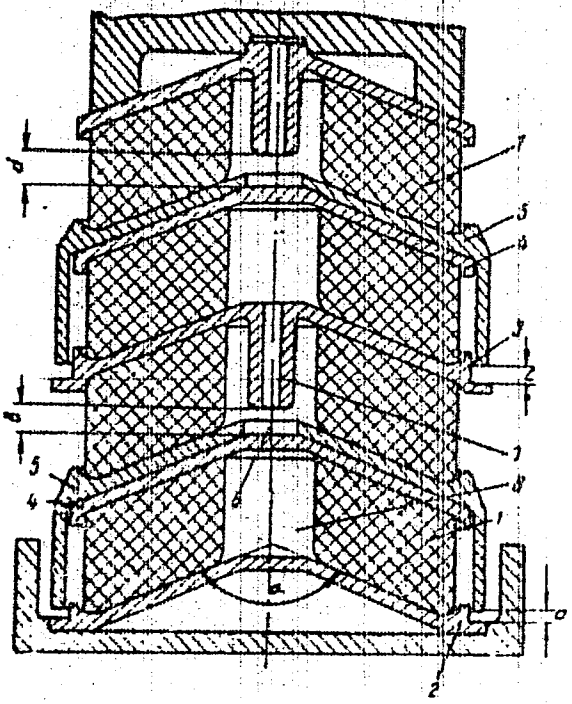
19781392

AA0046267



2/2

19781393

Radiobiology

USSR

UDC 612.014.481.1

DOLGOV, Ye. G. and ORALBAYEV, K. O., Semipalatinsk Medical Institute

"Some Mechanisms of the Damaging Effect of Irradiation and of Radiomimetic Agents"

Alma-Ata, Izvestiya Akademii Nauk Kazakhskoy SSR, No 1, Jan/Feb 71, pp 56-59

Abstract: Changes in the resistance of white rats to mercury dichloride (a typical thiotoxin) were studied at various intervals after whole-body x-ray irradiation and administration of two alkylating agents belonging to chloroethylamines: sarcolysin and Thio-TEPA. The results of this investigation have clearly demonstrated that endogenous thiols are indeed involved in the development of pathological changes after exposure to ionizing radiation and after administration of alkylating compounds.

1/1

USSR UDC: 577.4

ORANOV, A. M.

"Use of Multifunctional Elements With Independent Inputs for Covering Circuits Made of Elements of the AND-NOT Type"

Tr. Sib. fiz.-tekhn. in-ta pri Tomsk. un-te (Works of the Siberian Physicotechnical Institute Affiliated With Tomsk University), 1971, vyp. 62, pp 38-48 (from RZh-Kibernetika, No 8, Aug 72, Abstract No 8V455)

[No abstract]

1/1

AA0047079 ORANSKIY, G.A. UR 0482

Soviet Inventions Illustrated, Section II Electrical, Derwent,

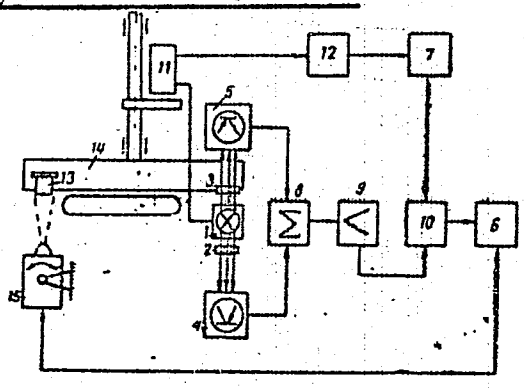
241700 FILM THICKNESS CHECK RIG to control it during its application on cathode (13) from atomizer (15) has on the same rotating holder as the cathode a transparent indicator (3). The film thickness on the latter is compared with that on a reference indicator by a photoelectronic system which is actuated periodically by lamp (1) switched on by pick-up (11). When the required film thickness has been reached, the atomizer is cut off.
26.1.68 as 1214955/25-28. I.A.PRUDVIBLOKH et alia.
LVOV POLYTECHNIC (25.8.69) Bul 14/18.4.69. Class 42b
Int.Cl.G 01 b.

19790550

AA0047079

AUTHORS: Prudviblokh, I. A.; Greben', Yu. I.; Kedra, Yu. V.; Marets, V. M.; Traube, L. V.; Oranskiy, G. A.; Soroka, B. P.

L'vovskiy Politekhnicheskiy Institut



19790551

2/2

USSR

UDC: 621.372.543(088.8)

ZAKHAROV, V. V., ORANSKIY, V. N.

"An Active Low-Frequency Filter"

USSR Author's Certificate No 266097, filed 2 Oct 68, published 12 Nov 70 (from RZh-Radiotekhnika, No 5, May 71, Abstract No 5D73 P)

Translation: This Author's Certificate introduces an active filter which contains an input transformer and a single-stage transistorized regenerative amplifier with two inputs, one of which is connected to a positive feedback circuit, while the other is connected to a negative feedback circuit. To eliminate the delay introduced by the filter, the input signal source is connected between the amplifier input tied to the positive feedback circuit and the common conductor, while the primary winding of the input transformer is connected to the same point through a blocking capacitor. Between the amplifier input tied to the negative feedback circuit and the common conductor is the secondary winding of the input transformer.

1/1

USSR

ORAV, T., SHANGIN-BEREZOVSKIY, ORAV, I.

Radiatsionnyy mutagenez i modifitsiruyushchiye yego usloviya (Radiation Mutagenesis and Conditions Modifying It). Tallin, Valgus, 1972, 215 pp, 800 copies printed

Contents

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USSR

ORAV, T., et al., Valgus, 1972, 215 pp

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USSR

ORAV, T., SHANGIN-BEREZOVSKIY, ORAV, I.

Radiatsionnyy mutagenez i modifitsiruyushchiye yego usloviya (Radiation Mutagenesis and Conditions Modifying It). Tallin, Valgus, 1972, 215 pp, 800 copies printed

Contents

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USSR

ORAV, T., et al., Valgus, 1972, 215 pp

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Genetics

USSR UDC 575.113:581.154

ORAV, T., and ORAV, I., Institute of Experimental Biology, Academy of Sciences Estonian SSR

"Increase in the Penetrance of Induced Chlorophyll Mutations Under the Effect of Biologinally Active Substances"

Tallin, Izvestiya Akademii Nauk Estonskoy SSR, Biologiya, Vol 20, No 2, 1971, pp 159-167

Abstract: It was shown in earlier work that chlorophyll mutations of barley often remain latent and are not manifested in subsequent generations. Treatment of barley seeds with biologically active substances such as ethylenimine or hydrazine HCl in small doses close to those producing a stimulating effect increased the penetrance of mutations with the result that there was a significant increase in the number of chlorophyll mutants among plants grown from the treated seeds. On the assumption that other biological stimulants must have a similar effect, the action of the growth stimulant SRV applied to M_2 or M_3 seeds of spring barley was studied. SRV is a mixture with the empirical formula $C_{53}H_4O_{22}N_3$ of polyfunctional acids (mol. wt. 100-1,100) derived from

USSR

ORAV, T., and ORAV, I., Izvestiya Akademii Nauk Estonoskoy SSR, Biologiya, Vol 20, No 2, 1971, pp 159-167

oil shale. Upon treatment of the barley seeds with SRV before or after sowing, the occurrence of chlorophyll mutants in families with latent mutations was increased. In some experiments that were conducted, an effect of SRV in increasing the frequency of mutations after seeds had been subjected to gamma-irradiation or treated with ethylenimine was observed. In all experiments the most effective concentrations of SRV were in the 0.002-0.1% range. The maximum increase in the frequency of chlorophyll mutations (by a factor ≥ 2) was for the types albina, viridis, atrovirens, flavoviridis, and xanthoalbina. The increase was smaller for strains of the xantha type and absent for strains of the rare types viridoalbina and viridomaculata. A comparison of the frequency of mutations obtained under the effect of SRV with the theoretically expected frequencies of occurrence of recessive mutants with various coefficients of lethality indicated that in the five types on which the greatest action was exerted a considerable portion of latent hereditary changes was activated. For the type albina the number of mutants was close to the theoretical maximum.

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Genetics

USSR UDC 575.113:581.154

ORAV, T., and ORAV, I., Institute of Experimental Biology, Academy of Sciences Estonian SSR

"Increase in the Penetrance of Induced Chlorophyll Mutations Under the Effect of Biologinally Active Substances"

Tallin, Izvestiya Akademii Nauk Estonskoy SSR, Biologiya, Vol 20, No 2, 1971, pp 159-167

Abstract: It was shown in earlier work that chlorophyll mutations of barley often remain latent and are not manifested in subsequent generations. Treatment of barley seeds with biologically active substances such as ethyleniminе or hydrazine HCl in small doses close to those producing a stimulating effect increased the penetrance of mutations with the result that there was a significant increase in the number of chlorophyll mutants among plants grown from the treated seeds. On the assumption that other biological stimulants must have a similar effect, the action of the growth stimulant SRV applied to M_2 or M_3 seeds of spring barley was studied. SRV is a mixture with the empirical formula $C_{53}H_4O_{22}N_3$ of polyfunctional acids (mol. wt. 100-1,100) derived from

1/2

USSR

ORAV, T., and ORAV, I., Izvestiya Akademii Nauk Estonoskoy SSR, Biologiya, Vol 20, No 2, 1971, pp 159-167

oil shale. Upon treatment of the barley seeds with SRV before or after sowing, the occurrence of chlorophyll mutants in families with latent mutations was increased. In some experiments that were conducted, an effect of SRV in increasing the frequency of mutations after seeds had been subjected to gamma-irradiation or treated with ethylenimine was observed. In all experiments the most effective concentrations of SRV were in the 0.002-0.1% range. The maximum increase in the frequency of chlorophyll mutations (by a factor $\geq$ 2) was for the types albina, viridis, atrovirens, flavoviridis, and xanthoalbina. The increase was smaller for strains of the xantha type and absent for strains of the rare types viridoalbina and viridomaculata. A comparison of the frequency of mutations obtained under the effect of SRV with the theoretically expected frequencies of occurrence of recessive mutants with various coefficients of lethality indicated that in the five types on which the greatest action was exerted a considerable portion of latent hereditary changes was activated. For the type albina the number of mutants was close to the theoretical maximum.

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USSR

UDC 621.378.33.016.35

BASHKIN, A. S., BELENOV, E. M., GONCHUKOV, S. A., CHAYEVSKIY, A. I., PETROVSKIY, V. N., PROTSENKO, Ye. D.

"Stabilizing the Frequency of Gas Laser Emission by the Method of Comparison With a Radio Frequency"

Moscow, Kvantovaya Elektronika, No 2, 1971, pp 40-49

Abstract: The authors study the intermode spacing as a function of various parameters of a laser on a wavelength of 0.63 μ operating under conditions of emission of three or two axial modes. It is proposed that certain properties of of the frequency characteristics be used to stabilize the emission frequency of a gas laser by the method of comparing the intermode spacing with a radio frequency. The resultant experimental data are theoretically studied for the case of emission of three axial modes in the region of symmetric tuning. It is shown how a stabilized gas laser can be made with a relative long-term frequency stability exceeding the results which have been attained up to the present time. The absolute frequency stability of such a laser (assuming high relative stability for long time intervals) will be determined by the displacement of the center of the line of the atomic transition due to various factors.

1/1

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202310011-9"

USSR

UDC: 621.375.82

BASHKIN, A. S., GRAYEVSKIY, A. N.

"Photorecombination Lasers (Survey)"

Moscow, Kvant. elektronika--sbornik (Quantum Electronics--collection of works), No 1(13), "Sov. radio", 1973, pp 5-29 (from RZh-Fizika, No 8, Aug 73, abstract No 9D1071 by the authors)

Translation: The physical principles of the theory of operation of photorecombination lasers are examined. An investigation is made into methods of creating pulsed and continuous lasers. Possible ways of realizing specific systems are considered. The main emphasis is laid on the advantages of photorecombination lasers: a wide band of working wavelengths (from the UV to the IR), the possibility of frequency tuning (at least 10%), and high efficiency. Bibliography of 79 titles.

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USSR

BASOV, N. G., ORAYEVSKIY, A. N., et al., Lebedev Physics Institute, USSR Academy of Sciences

"Nonequilibirum Oscillation Kinetics of Molecules in the Presence of a Resonant Laser Radiation Field"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Nov 73, pp 1837-1856

Abstract: The oscillation kinetics of molecules under nonequilibrium conditions produced by resonant laser radiation is considered within the framework of the harmonic oscillator model. A method is developed which can be employed for studying the response of the system to an external field whose frequency is identical to that of one of the vibration levels (arbitrary multiplicity resonance). The nonequilibrium distribution function is calculated for stationary and quasistationary conditions. The dependence of the vibrational energy and decay rate of the system on external parameters determined. The extreme characteristics are determined. Similar questions are studied for nonequilibrium conditions produced by resonant laser radiation via a cascade mechanism of population of the vibrational levels. The article includes 22 equations and six figures. There are 32 references.

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USSR

BASOV, N. G., BASHKIN, A. S., IGOSHIN, V. I., ORAYEVSKIY, A. N., and YURYSHEV, N. N.

"Study of Vibrational Energy Transfer From OD to CO_2"

Moscow, Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 16, No 10, 20 Nov 72, pp 551-555

Abstract: The article reports the first detection of effective energy transport from the OD radical to CO_2 molecules, resulting in the laser effect in a mixture of O_3, D_2, and CO_2 at a wavelength of 10.6 microns. A simple analytic reaction model and the results of measuring the time characteristics of the laser generation pulse are used to evaluate the rate constant for vibrational-vibrational energy exchange between OD and CO_2. The authors used two measurement methods -- according to the time delay of generation relative to the onset of initiation, and according to attenuation of the chemical laser generation signal. A laser tube 80 cm long and 1.5 cm in diameter was used in the experiment. Pumping was effected by two IFP-20000 lamps.

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USSR

UDC 621.373:530.145.6

BASHKIN, A. S., BELENOV, E. M., GONCHUKOV, S. A., GRAYEVSKIY, A. N., PETROVSKIY, V. N., PROTSENKO, Ye. D.

"Stabilizing the Emission Frequency of a Gas Laser by the Method of Comparison With a Radio Frequency"

V sb. Kvant. elektronika (Quantum Electronics--collection of works), No 2, Moscow, 1971, pp 40-48 (from RZh-Radiotekhnika, No 7, Jul 71, Abstract No 7D117)

Translation: The authors study intermode spacing as a function of various laser parameters for a laser operating on a wavelength of 0.63 micron emitting three or two axial modes. It is proposed that certain properties of the frequency responses be used for stabilizing the emission frequency of a gas laser by the method of comparison of the intermode spacing with a radio frequency. A theoretical study is made of the resultant experimental data for the case of emission of three axial modes in the region of symmetric tuning. It is shown that a stabilized gas laser can be made with relatively long-term frequency stabilization, surpassing the results which have been achieved up to the present time. The absolute frequency stability of such a laser (in the case of high relative stability for long time intervals) will be determined by the

USSR

BASHKIN, A. S., et al., Kvant. elektronika (Quantum Electronics--collection of works), No 2, Moscow, 1971, pp 40-48 (from RZh-Radiotekhnika, No 7, Jul 71, Abstract No 7D117)

shift in the center of the line of the atomic transition as a consequence of various factors. Six illustrations, bibliography of four titles.

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USSR

BASOV, N. G., ZAVOROTNYY, S. I., MARKIN, YE. P., NIKITIN, A. I., and ORAYEVSKIY, A. N., Physics Institute imeni P. N. Lebedev, Academy of Sciences USSR

"High-Pressure, Pulsed Chemical Laser Using a D_2+F_2+CO_2 Mixture"

Moscow, Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 15, No 3, 5 Feb 72, pp 135-137

Abstract: The idea of obtaining an inverted population by energy transfer from "hot" molecules pumped during a chemical reaction to "cold" molecules was [illegible] the authors call application to chemical lasers. The method of introducing a polyatomic CO_2 molecule into a D_2+F_2 mixture enabled the authors to increase the chemical efficiency and output energy of a pulsed chemical laser approximately 10-fold, and the successful completion of experiments with the mixture at low pressures made it possible for them to undertake experiments at higher reactant pressures. The introduction of CO_2 molecules made it possible to put together a working mixture in which the partial pressure of deuterium and commercially pure fluorine exceeded the

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USSR

DASOV, N. G., et al., Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 15, No 3, 5 Feb 72, pp 135-137

second chain flammability limit of a pure stoichiometric D_2-F_2 mixture. The typical partial pressure ratio of the principal components of the gas mixture -- fluorine, deuterium, carbon dioxide, and helium -- was 1:1 4:11 [sic] respectively, and the total pressure varied within several hundred torr. Experiments were staged in a stainless steel reactor vessel. Initiation of the reaction was effected by the radiation of a linear flash lamp with a brightness temperature of 20,000-25,000° K. It was found that the rate of formation of fluorine atoms during dissociation of fluorine molecules under the action of the radiation of the lamps being used is insufficient in most cases for the development of oscillation. Therefore, to improve reaction initiation conditions, a readily dissociating fluorine-containing component (molybdenum hexafluoride or other fluorine compound) was added to the mixture. The MoF_6 pressure (several torr) was chosen so that the characteristic chemical reaction time should be about 1-2 microseconds. On a wavelength of about 10.6 microns oscillation, as a rule, appears 5 microseconds after the start of the light pulse and has a 7-10 [illegible]. Spikes lasting about 1 microsecond

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USSR

BASOV, N. G., et al., Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 15, No 3, 5 Feb 72, pp 135-137

are sometimes observed at the top of the pulse. The energy in the radiation pulse varies from 5 to 15 j according to the composition of the gas mixture.

The authors thank A. V. PANKRATOV, V. S. ZUYEV, V. L. TAL'ROZA, P. G. GRIGOR'YEV, L. V. KULAKOV, V. T. GALOCHKIN, V. V. GROKOV, B. L. EDROVICH, and G. K. VASIL'YEV for their assistance in the work.

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USSR

BASOV, N. G., GROMOV, V. V., KOSHELEV, Ye. L., MARKIN, Ye. P., ORAYEVSKIY, A. N., SHAPOVALOVA, D. S., SHCHEGLOV, V. A., Physics Institute imeni P. N. Lebedev, Academy of Sciences, USSR

"A Continuous-Action DF — CO_2 Chemical Laser"

Moscow, Pis'ma v (Letters to the) Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 13, No 9, 5 May 1971, pp 496-498

Abstract: A report is given on obtaining continuous laser emission in subsonic gas streams. Generation takes place due to CO_2 molecules excited by means of the transmission of energy from oscillatorily excited DF* molecules obtained in the process of a chain reaction of deuterium with fluorine with purely chemical initiation. 2 figures. 2 bibliographic entries.

1/1

USSR

UDC 621.375.526.001.388

ORAYEVSKIY, A. N., SOKOVA, A. A.

"Effect of Quantum Fluctuations on the Spectral Purity of the Output Signal of Lasers"

Tr. VNII fiz.-tekhn. i radiotekhn. izmereniy (Works of the All-Union Scientific Research Institute of Physicotechnical and Radio Engineering Measurements), 1970, No. 3(33), pp 200-208 (from Referativnyy Zhurnal, Metrologiya i izmeritel'naya tekhnika, No 11, Nov 71, Abstract No 11.32.63)

Translation: The effect of quantum fluctuations on the spectral purity of the output signal of lasers is discussed, the effect of these fluctuations on the electromagnetic field in the resonator is calculated and the fluctuations arising in the radiation field phase are determined. The calculation shows that the broadening caused by spontaneous radiation in the resonator is different from that in free space. The reason for this difference is associated not only with the fact that the probabilities of spontaneous radiation in the resonator and free space are different, but also with the effect of the correlation between atoms in the resonator and the finite interaction time of atoms with the field. 1 ill., 4 ref.

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USSR

UDC 621.378.33

BASOV, N. G., IGOSHIN, V. I., MARKIN, Ye. P., ORAYEVSKIY, A. N.

"Dynamics of Chemical Lasers"

Moscow, Kvantovaya Elektronika, No 2, 1971, pp 3-24

Abstract: The article is a survey of chemical methods of laser excitation. An analysis is made of the possibility of inverting populations of the vibrational levels of molecules in the case of self-sustaining chemical processes (chain and branched-chain reactions, thermal explosion). Special consideration is given to problems in the theory of vibrational relaxation as applied to chemical lasers. The results of experimental studies of a number of laser systems with chemical pumping are presented. Some methods of initiating a reaction in large volumes of reactant are discussed on the qualitative level. A list of chemical lasers is presented (as of 1 Aug 70) with indication of their operating characteristics. Six illustrations, three tables, and a bibliography of 99 titles.

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USSR UDC 621.373:530.145.6

BASOV, N. G., IGOSHIN, V. I., MARKIN, Ye. P., ORAYEVSKIY, A. N.

"Dynamics of Chemical Lasers. (A Survey)"

V sb. Kvant. elektronika (Quantum Electronics--collection of works), No 2, Moscow, 1971, pp 3-24 (from RZh-Radiotekhnika, No 7, Jul 71, Abstract No 7D132)

Translation: The paper is a survey of chemical methods of laser excitation. An analysis is made of the possibility of obtaining an inverse population of the vibration levels of molecules in the case of self--sustained chemical processes (chain and branched-chain reactions, heat explosion). Special attention is given to problems of the theory of vibrational relaxation as applied to chemical lasers. The results of an experimental study of a number of lasers with chemical pumping are presented. Some methods of initiating reaction in large volumes of the reagent are qualitatively discussed. Chemical lasers are listed (as of 1 August 1970) with an index of working characteristics. Six illustrations, three tables, bibliography of ninety-nine titles. Resumé.

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USSR UDC: None

ORAYEVSKIY, A. N. and SHEGLOV, V. A.

"Propagation of Photodissociation Waves in Gases With Chemical Reactions Considered"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol. 59, No. 9, 1970, pp 845-856

Abstract: Photodissociation waves are defined as disturbances which can be propagated through a gas with ultrasonic speed. As a consequence of the elementary acts taking place in the gas, its molecules break up into single atoms of the nascent gas. The authors consider the propagation of the waves in the gas if a second gas, capable of chemical activity with the atoms of the first, is mixed with it. A typical example of such a mixture is a binary gas in which a chain reaction is possible. Approximate relationships are obtained for the velocity of the waves by considering a plane layer of the binary gas with a thickness equal to the wave length, on which a low-density current of quanta from a quasi-

USSR

ORAYEVSKIY, A. N., et al, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol. 59, No. 9, 1970, pp 845-856

monochromatic light is normally incident. The authors begin their analysis of the photodissociation waves with a system of a homogeneous equations for the transmission of the radiation and the kinetic equations. It is implicitly assumed, in the analysis, that the reaction between the gases progresses under isothermic conditions. The authors are connected with the Physics Institute imeni P. N. Lebedev, Academy of Sciences USSR.

USSR

UDC 541.15

ORAYEVSKIY, A. N., Institute of Physics imeni P. N. Lebedev, Academy of Sciences USSR

"Thermal Explosion Limits Under Irradiation"

Moscow, Khimiya Vysokikh Energiy, Vol 5, No 2, Mar-Apr 71, pp 118-120

Abstract: In studying the effect of radiation on thermal explosion, using as an example of the reaction of hydrogen with chlorine, it was shown that in exothermal chemical reactions in which population inversion in the reaction products occurs, the limit of thermal explosion can be shifted towards higher temperatures and pressures by exposing the reaction mixture to sufficiently intensive radiation.

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USSR UDC: 621.376:530.145.6:621.376

KLYUYEV, V. P., MASH, D. I., MOROZOV, V. V., MIKOGOSYAN, D. N., ORAYEVSKIY, A. N.

"Detection of Infrared Emission by Shifting it to the Visible Range"

Kratk. soobshch. po fiz. (Brief Reports on Physics), 1970, No 5, pp 38-42 (from RZh-Radiotekhnika, No 10, Oct 70, Abstract No 10D459)

Translation: An experimental investigation was made into the possibility of detecting weak infrared radiation by shifting it in a nonlinear crystal ($LiNbO_3$) with a powerful pulse of emission from an argon laser. The installation used was sufficiently sensitive to create a nonlinear infrared spectrometer; it is assumed that such a spectrometer can produce broadening of the order of 1 Å. Two illustrations, bibliography of twelve titles. N. S.

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USSR

UDC: 621.373:530.145.6

BASOV, N. G., GALOCHKIN, V. T., KULAKOV, L. V., MARKIN, Ye. P., NIKITIN, A. I., ORAYEVSKIY, A. N.

"A Chemical Laser Based on the Mixture $D_2+F_2+CO_2$"

Kratk. soobshch. po fiz. (Brief Reports on Physics), 1970, No 8, pp 10-14 (from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12D226)

Translation: To produce emission on the mixture $D_2+F_2+CO_2$, the authors used the idea of creating a population inversion by transmitting excitation from a "hot" to a "cold" reaction product. With the ratio of D_2 and F_2 pressures equal to 0.9:0.9 mm Hg, the half-width emission pulse duration is ~3 μsec. The addition of 0.1 mm Hg of CO_2 to this mixture cuts the pulse duration in half, and when the pressure is increased to 0.3 mm Hg, emission is cut off on a wavelength of 4 μ, but emission appears on a wave of 10.6 μ. As the pressure rises further, the emission intensity of the pulse increases, reaching a maximum in the range of 1-2 mm Hg. The pulse duration of emission on activated CO_2 molecules is 400 μsec, i. e. it corresponds to the time of existence of chemiluminescence of excited DF* molecules. The energy in the emission pulse on CO_2 molecules increases in comparison with the emission energy of DF* by a factor of 10, which corresponds to an increase in the quantum yield by a factor of 25. A. K.

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1/2 040 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--BRANCHING REACTIONS AND CHEMICAL LASERS -U-

AUTHOR-(05)-BASOV, N.G., MARKIN, E.P., NIKITIN, A.I., ORAEVSKY, A.N., LEBEDEV, P.N.

COUNTRY OF INFO--USSR, UNITED STATES

SOURCE--IEEE J. QUANTUM ELECTRONICS, USA, VOL. QE-6, NO. 3, P. 183-4, MARCH 1970, SECOND CONFERENCE ON CHEMICAL AND MOLECULAR LASERS. DIGEST.

DATE PUBLISHED----MAR70

SUBJECT AREAS--CHEMISTRY, PHYSICS

TOPIC TAGS--CHEMICAL REACTION, HYDROGEN, FLUORINE, AMMONIA, CARBON DIOXIDE, CHEMICAL LASER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/0075 STEP NO--US/0000/70/000/003/0183/0184

CIRC ACCESSION NO--AT0123847

UNCLASSIFIED

2/2 040 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AT0123847

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ABSTRACT ONLY GIVEN, SUBSTANTIALLY AS FOLLOWS. THE AUTHORS DISCUSS THE PECULIARITIES OF POPULATION INVERSION WHICH OCCUR IN BRANCHED CHEMICAL REACTIONS AND EXPERIMENTAL RESULTS OBTAINED WITH MIXTURES H SUB2 PLUS F SUB2 AND HN SUB3 PLUS CO SUB2. FACILITY: PHYS. INST., MOSCOW, USSR.

UNCLASSIFIED

1/2 060 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--EFFECT OF THE WAVEGUIDE PROPERTIES OF A P-N JUNCTION ON THE OUTPUT OF GALLIUM ARSENIDE LASER DIODES -U-

AUTHOR-(03)-ALLAKHVERDYAN, R.G., ORAYEVSKIY, A.N., SUCHKOV, A.F.

COUNTRY OF INFO--USSR

SOURCE--FIZIKA I TEKHNIKA POLUPROVODNIKOV, VOL. 4, FEB. 1970, P. 341-346

DATE PUBLISHED----FEB70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--PN JUNCTION, OPTIC WAVEGUIDE, GALLIUM ARSENIDE LASER, GALLIUM ARSENIDE, SEMICONDUCTOR DIODE, HIGH ENERGY INJECTION DEVICE, LASER EMISSION, LASER ENERGY, LASER POWER OUTPUT, LASER PULSE, DAMPING MOMENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1992/1464 STEP NO--UR/0449/70/004/000/0341/0346

CIRC ACCESSION NO--AP0112458

UNCLASSIFIED

2/2 060 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0112458

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CONSIDERATION OF THE EFFECT OF AN OPTICAL WAVEGUIDE IN AN INJECTION LASER ON THE THRESHOLD LASING CONDITIONS AND ON THE FIELD DISTRIBUTION IN THE NEAR AND FAR ZONES FOR VARIOUS PARAMETERS OF THE ACTIVE REGION. IN THE CHOSE LASER MODEL, IN CONTRAST TO PREVIOUS WORKS ON THIS SUBJECT, THE REAL AND IMAGINARY PARTS OF THE COMPLEX PERMITTIVITY ARE APPROXIMATED BY CONTINUOUS FUNCTIONS OF THE COORDINATES. ON THE BASIS OF A STUDY OF UNSTEADY PROCESSES IN THE GIVEN MODEL OF AN INJECTION SEMICONDUCTOR LASER, IT IS SHOWN THAT FOR CERTAIN PARAMETER VALUES OF THE OPTICAL WAVEGUIDE OUTPUT POWER PULSATIONS OF UNDAMPED 'PEAK' CHARACTER ARISE. THE PULSATIONS ARE DAMPED IF BOUND FIELD STATES ARISE IN A POTENTIAL WELL FORMED BY AN OPTICAL INHOMOGENEITY. FACILITY: AKADEMIIA NAUK SSSR, FIZICHESKII INSTITUT, MOSCOW, USSR.

UNCLASSIFIED

USSR

BASOV, N. G., ORAYEVSKIY, A. N., SHCHEGLOV, V. A., Physics Institute imeni P. N. Lebedev of the Academy of Sciences USSR, Moscow

"Production of an Inverse Population of Working Gas Molecules in a Mixture With a Thermally Excited Auxiliary Gas"

Leningrad, Zhurnal Tekhnicheskoy Fiziki, Vol 40, No 1, Jan 70, pp 173-180

Abstract: A model is proposed for calculating the kinetics corresponding to the interaction of a cold three-level working gas and a thermally excited two-level auxiliary gas. It is shown that there is an inverse population as a result of resonance exchange of quanta in the working gas. The limiting densities of the active molecules are calculated and the shape of the inversion pulse is determined. The oscillatory kinetics for a specific binary CO_2-N_2 mixture is discussed. A relationship is obtained between the density of the inverse population and the initial excitation temperature, the temperature of the gas mixture, and the partial pressures of the components of the initial mixture. It is shown that in this case one can achieve efficiencies 3-4 times higher than the limiting efficiencies achieved using thermal excitation. This is attributed to the fact

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USSR

BASOV, N. G., et al., Zhurnal Tekhnicheskoy Fiziki, Vol 40, No 1, Jan 70, pp 173-180

that in obtaining the inverse population of working gas molecules in a mixture with thermally excited gas carriers, the energy expended goes only into thermal excitation of the internal degrees of freedom of the auxiliary gas. It is noted that a theoretical study will require further analysis.

Acc. Nr: AP0047029

Abstracting Service: INTERNAT. AEROSPACE ABST

Ref. Code: 5-70 UR0057

A70-25112 # Obtaining population inversion of the molecules of the working gas in a mixture with a thermally excited auxiliary gas (Poluchenie inversnoi naselennosti molekul rabochego gaza v smesi s termicheski vozbuzhdennym vspomogatel'nym gazom). N. G. Basov, A. N. Orlovskii, and V. A. Shcheglov (Akademiia Nauk SSSR, Fizicheskii Institut, Moscow, USSR). *Zhurnal Tekhnicheskoi Fiziki*, vol. 40, Jan. 1970, p. 173-180. 8 refs. In Russian.

Calculation of the kinetics of the interaction between a 'cold' (three-level) working gas and a thermally excited (two-level) auxiliary gas within the framework of a model representation. It is shown that population inversion occurs in the working gas, due to resonance quantum exchange. The maximum densities of the 'active' molecules are calculated, and the inversion pulse shape is determined. The vibrational kinetics for the carbon dioxide/nitrogen system are investigated. The dependences of the population inversion on the initial excitation temperature, the temperature of the gas mixture, and the partial pressures of the components of the initial mixture are determined. The population inversion efficiency is calculated. A.B.K.

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40

21

REEL/FRAME
19790465

USSR

UDC: None

BASOV, N. G., MAL'TSEV, K. K., MARKIN, Ye. P., MARTYNENKO, V. D., ORAYEVSKIY, A. N., PANKRATOV, A. V., SAGITOV, R. G., and SELICHKOV, A. N.

"Chemical Laser of Mixed Difluoramin With Hydrogen"

Moscow, Sbornik kratkiye soobshcheniya po fizike, No 11, November 1971, pp 5-9

Abstract: This brief communication reports oscillations obtained from oscillatory-rotatory transitions of HF molecules resulting from the reaction of NF_2H with hydrogen, specifically the time variations of the gain yielded by the mixture as a function of the experimental conditions. The experimental equipment consisted of two lasers, an oscillator, and an amplifier, excited by an electrical discharge through the mixture. The oscillator was a quartz tube 85 cm long and 1.7 cm in diameter, with LiF windows set at the Brewster angle. Determinations were made of the optimal relationships between the pressures of the NF_2H and H_2 in the mixture, and a curve is plotted of the energy of the pulse oscillation in the mixture as a function of the ratio of the two pressures. Curves are also plotted for the gain factor in the mixture as a function of time. The authors express their thanks to L. V. Kulakov for his help in plotting the pulse energy spectrum.

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USSR

BASOV, N. G., ORAYEVSKIY, A. N., SUCHKOV, A. F., Physics Institute imeni P. N. Lebedev, Academy of Sciences of the USSR

"Feasibility of Ultrashort Laser Pulse Emission on Combination, Vibrational-Rotational Transitions of Molecular Hydrogen"

Moscow, Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 16, No 5, 5 Sep 72, pp 301-304

Abstract: The authors consider the possibility that laser emission might be achieved on transitions which show up in the vibrational-rotational spectrum of hydrogen in the presence of a sufficiently strong electric field E, either AC or DC. The probability of emission or absorption of a quantum is proportional to E^2. An expression is derived for finding the amplification factor on induced transitions. The results of the study show that it is possible, at least in theory, to achieve emission without an external field which induces transitions.

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1/2 018 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--APPLICATION OF THE VARIATIONAL METHOD FOR STUDYING DISSIPATING INSTABILITY IN A PLASMA -U-

AUTHOR-(03)-KOGAN, YE.YA., MOISEYEV, S.S., ORAYEVSKI, V.N.

COUNTRY OF INFO--USSR

SOURCE--ZHURNAL TEKHNICHESKOI FIZIKI, VOL. 40, APR. 1970, P. 711-716

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--PLASMA INSTABILITY, MAGNETIC FIELD EFFECT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/1320 STEP NO--UR/0057/70/040/000/0711/0716

CIRC ACCESSION NO--AP0124971

UNCLASSIFIED

2/2 018 UNCLASSIFIED PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0124971

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ESTIMATION OF THE STABILITY OF DISSIPATING SYSTEMS, SUCH AS A PLASMA, USING A GENERAL RELATION BETWEEN THE ENERGY BALANCE OF THE WAVE AND THE MEDIUM. THE TRANSFORMATION OF THE SUYDAM CRITERION FOR NONIDEAL MHD IS EXAMINED. A STUDY IS ALSO MADE OF THE INSTABILITY IN SYSTEMS WITH A CORRUGATED CURVATURE OF THE MAGNETIC FIELD FORCE LINES. WHERE POSSIBLE, TWO DIFFERENT VARIATIONAL APPROACHES TO THESE PROBLEMS ARE COMPARED. FACILITY: AKADEMIIA NAUK UKRAINSKOI SSR, INSTITUT FIZIKI, KIEV, UKRAINIAN SSR.

UNCLASSIFIED

1/2 045 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--INTERACTION OF MAGNETOHYDRODYNAMIC WAVES IN A BOUNDED PLASMA -U-

AUTHOR-(03)-KARPLIUK, K.S., KOLESNICHENKO, I.I., ORAEVSKIY, V.N.

COUNTRY OF INFO--USSR

SOURCE--NUCLEAR FUSION, VOL. 10, MAR. 1970, P. 3-11

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--MAGNETOHYDRODYNAMIC WAVE, WAVE EQUATION, PLASMA INSTABILITY, STRONG MAGNETIC FIELD, SURFACE WAVE, ACOUSTIC WAVE, PLASMA INTERACTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1985/1749 STEP NO--AU/0000/70/010/000/0003/0011

CIRC ACCESSION NO--AP0101802

UNCLASSIFIED

2/2 045 UNCLASSIFIED

CIRC ACCESSION NO--AP0101802 PROCESSING DATE--16OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A DESCRIPTION IS GIVEN OF A GENERAL METHOD OF DERIVING DYNAMIC EQUATIONS FOR THE AMPLITUDES OF INTERACTING WAVES (BOTH VOLUME AND SURFACE WAVES) IN A BOUNDED PLASMA. THE TREATMENT IS BASED ON THE STUDY OF THE INTERACTION OF MAGNETOHYDRODYNAMIC WAVES IN A PLASMA CYLINDER CONFINED BY A STRONG MAGNETIC FIELD. DECAY INSTABILITIES WERE STUDIED IN ORDER TO FIND THE PROBABILITIES AND EVALUATE THE CHARACTERISTIC TIMES OF THE CORRESPONDING THREE PLASMON PROCESSES. IT IS SHOWN THAT THE NONLINEARITY OF THE BOUNDARY CONDITIONS CAN HAVE A SUBSTANTIAL EFFECT ON THREE PLASMON INTERACTIONS INVOLVING SURFACE WAVES. THE LINEAR PROBLEM WAS SOLVED IN ADVANCE. IT IS SHOWN, IN PARTICULAR, THAT IN ADDITION TO THE ALFVEN SURFACE WAVES, ACOUSTIC TYPE SURFACE WAVES WITH FREQUENCIES APPROXIMATELY EQUAL CAN PROPAGATE IN THE PLASMA CYLINDER.

FACILITY: AKADEMIIA NAUK UKRAINSKOI SSR, INSTITUT FIZIKI, KIEV, UKRAINIAN SSR.

UNCLASSIFIED

USSR

UDC 621.376.234

ORAZGULYYEV, B.

"Silicon Photomagnetic Infrared Receiver"

Moscow, Pribory i Tekhnika Eksperimenta, No 5, 1972, pp 193-194

Abstract: A low-inertia infrared detector based on the photomagnetic effect in the middle vacancies in Si operating at a temperature of 275° K and lower is described. The volt-watt and limiting sensitivity characteristics are presented for a wavelength of 28 microns. The inertia of the detector is 10^{-9} seconds. The detector is not harmed by short-term effects of high power levels which are highly dangerous to p-n-junction detectors. When the detector temperature drops to 80° K its volt-watt sensitivity increases by an order and more. After corresponding calibration it can be used as a power meter like a calorimeter.

Structurally the described photomagnetic receiver does not differ from the InSb receivers with natural conductivity. The sensitive elements of the receiver are in the form of 7 × 2.5 × 0.5 mm^3 plates of single p-Si crystals alloyed with B or Al. The specific resistance of the crystals is 0.2-7,800 ohm-cm at room temperature. Al contacts are applied to the ends of the plates, and wires are soldered to them connected with the input of the V6-4 or F116 microvoltmeter. The plate is mounted on the inside wall of a Dewar vessel made of copper (or glass). On the outer wall of the Dewar there is a sealed

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USSR

ORAZGULYYEV, B., Pribory i Tekhnika Eksperimenta, No 5, 1972, pp 193-194

window which is transparent for infrared radiation in the Si sensitivity range. The Dewar is placed between the poles of an electromagnet, and the plate is illuminated by a laser beam with a 28 micron wavelength. The laser operates in the continuous mode on water vapor.

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USSR UDC 519.2

ORAZOV, G.

"More Precise Definition of the Theorems of Asymptotic Distribution of the Sums of a Random Number of Random Terms for Different Normalizations"

Nauch. tr. Tashkent. un-t (Scientific Works of Tashkent University), 1972, vyp. 402, pp 87-93 (from RZh-Kibernetika, No 9, Sep 72, Abstract No 9V13)

Translation: Let ξ_n, $n \geq 1$, be the sequence of independent identically distributed random variables for which $M|\xi_1|^2 < \infty$ ($M\xi_1 = a$, $D\xi_1 = v^2$), ν_λ is for each $\lambda > 0$ the random variable which is independent of the sequence ξ_n, $n \geq 1$ assuming integral nonnegative values such that $M\nu_\lambda^2 < \infty$; $\nu_\lambda \to \infty$ for $\lambda \to \infty$ and $\gamma = o(\alpha)$ (here $D\nu_\lambda = \gamma^2$, $M\nu_\lambda = \alpha$). Also let $\zeta_\nu = \xi_1 + \ldots + \xi_{\nu_\lambda}$. A series of estimates of the rate of convergence to the limiting normal distribution is established for $\lambda \to \infty$ of the random variable ζ_ν centered by the values of $a\nu_\lambda$ or $a\alpha$ and the normalized variables $\sigma = \sqrt{D\zeta_\nu}$, $v\sqrt{\nu_\lambda}$ or $v\sqrt{\alpha}$.

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USSR

ORBAN, YU. M. and STUDNEV, YU. P.

"Ariy and Fresnel Functions as Limiting Rules for Convolutions of Functions of Limited Variation"

Ukr. Mat. Zh. [Ukranian Mathematics Journal], 1973, 25, No 3, pp 323-331 (Translated from Referativnyy Zhurnal Kibernetika, No 10, 1973, Abstract No 10V26)

Translation: A certain generalization of a global version of the central limit theorem from the theory of probabilities is studied. Suppose $F_n(x) = V^{*n}(x) = V(x)*\ldots*V(x)$ (* is the sign of the operation of convolution), $V(x)$ is a complex-valued function fixed in $(-\infty, \infty)$ and satisfying the conditions $V(-\infty) = 0$, $V(+\infty) = 1$, $\int |dV(x)| < +\infty$. Conditions are studied under which the functions $\phi_n(x) = F_n(B_n x)$ converge to the functions

$$K_q(x; a) = \int_{-\infty}^{x} k_q(z; a)\,dz, \quad q = 1, 2, \ldots,$$

$$L_q(x; a) = \int_{-\infty}^{x} l_q(z; a)\,dz, \quad q = 1, 2, \ldots,$$

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USSR
ORBAN, YU. M. and STUDNEV, YU. P., Ykr. Mat. Zh., 1973, 25, No 3, pp 323-331

where

$$k_q(x;a)=\frac{1}{2\pi}\int_{-\infty}^{\infty}\exp\left\{-itx+\frac{(it)^{2q+1}}{(2q+1)!}a\right\}dt,\ q=1,2,\ldots,$$

$$l_q(x;a)=\frac{1}{2\pi}\int_{-\infty}^{\infty}\exp\left\{-itx+i\frac{t^{2q}}{(2q)!}a\right\}dt,\ q=1,2,\ldots,$$

while a is a real number.

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Author's view

Acc. Nr. AP0053626 Abstracting Service: CHEMICAL ABST. Ref. Code UR0366

110915w Difluoroiodine derivatives of organic compounds. Lyalin, V. V.; Orda, V. V.; Alekseeva, L. A.; Yagupol'skii, L. M. (Inst. Org. Khim., Kiev, USSR). *Zh. Org. Khim.* 1970, 6(2), 329–32 (Russ). The reaction of RI:O or RI(O_2CCF_3)$_2$ (R is Ph, *p*-MeC_6H_4, *o*-$O_2NC_6H_4$, *m*-FC_6H_4, *p*-FC_6H_4, β-pyridyl, C_6F_5, or F_3CCF_2) with SF_4 in CH_2Cl_2 at −20° gave 59–100% RIF_2.

CPJR

REEL/FRAME
19830681

USSR

UDC 532.517.4

IVANOV, V. N., ORDANOVICH, A. Ye.

"Certain Reverse Relationships Arising in Turbulent Cellular Convection in the Atmosphere"

Tr. In-t. Eksperim. Meteorol. Gl. Upr. Gidrometeorol. Sluzhby pri Sov. Min. SSSR [Works of the Institute of Experimental Meteorology, Main Administration for the Hydrological and Meteorological Service, Council of Ministers, USSR], No 26, 1972, pp 51-58, (Translated from Referativnyy Zhurnal, Mekhanika, No 11, 1972, Abstract No 11 B827 by the author's).

Translation: The feedback mechanism developing in cellular convection in a turbulent atmosphere is analyzed. This mechanism is based on the dependence of turbulent exchange factor, determining the degree of instability of a flow by means of the Reynolds number, on external parameters (mean wind speed, boundary layer thickness) and intensity of convection arising. This feedback stabilizes convection and maintains its intensity at a given level. Consideration of the dependence of turbulent exchange factors on degree of instability allows the slight excess of experimental values of Rayleigh numbers over their critical values to be explained. 8 Biblio. Refs.

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ORDOVSKIY, D.L.

JPRS 60298

17 October 1973

(5)

PHYSIOLOGY OF THE SONAR SYSTEM IN BLACK SEA DOLPHINS

UDC 591.185.5:599.537

[Article by E. Sh. Ayrapet'yants, V. A. Vorontsov, Yu. V. Ivanenko, N. P. Ivanov, D. L. Ordovskiy, B. F. Sergeyev, and V. I. Chilingiris; Leningrad, Zhurnal Evolyutsionnoy Biokhimii i Fiziologii, Russian, No 4, 1973, pp 416-422] submitted 31 January 1973.

Black Sea dolphins (Tursiops truncatus and Phocaena phocaena) were found to be capable of detecting metal spheres 5 to 150 mm in diameter and cylinders of the same diameter and height from a distance of over 24 m. The spheres and cylinders could be differentiated from 17.0 and 18.5 m, respectively. The dolphin's echo-locator adapted in the course of location, i.e., the locating signals adjusted to the parameters of the objects located. The directivity of emission varied widely. The directivity pattern was summed with no change in the position of the animal's head. The vertical planes narrowed with increasing frequency and decreasing duration of the signal. When the reception pattern is scanned by turning the head, there evidently takes place a spatial-frequency filtering that ensures the directed and coordinated reception of the echosignal.

Introduction

The nature of the propagation of sound waves in water creates favorable conditions for the use of echolocation by aquatic organisms. Echolocation has reached the highest peak of development in dolphins [1-7] whose enormous and rather highly developed brain enables them to control locating sound pulses and to make a complex analysis of echosignals. Accordingly, knowledge of the physiology of the dolphin sonar system is of value not only from the general biological standpoint but also for bionics problems.

[I - USSR - C]

Acc. Nr: AP0037018 Ref. Code: UR 0239

PRIMARY SOURCE: Fiziologicheskiy Zhurnal SSSR, 1970, Vol 56, Nr 2, pp 284-288

PACING MICRO-MANIPULATOR FOR MICROELECTRODE STUDIES

G. S. Orduyan

Computer Center Orbeli's and Institute of Physiology, Armenian Acad. Sci. SSR, Erevan.

A complex device for pacing motor and micro-manipulator was suggested inserting a microelectrode into tissue during electrophysiological studies. The device was manufactured out of standard «Razdan-2» computer cells and accomodated for four-phase pacing motor. Type ШДР-521 pacing motor was used as the basic motor. The motor rotation was transmitted to the micro-manipulator by means of Cardan's transmission. «Value» of one pace was 4 microns. The device had two working regimens: discrete and incessant. Apart from the main control table, a separate distant one was provided which enabled to easily control the microelectrode movement and automatically find the neurons both for extracellular and intracellular recording.

Dr.

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REEL/FRAME
19721954

2

Powder Metallurgy

USSR

UDC 621.762.8

ORDAN'YAN, S. S., and DROZDETSKAYA, G. V., Leningrad Technological Institute imeni Lensovet

"Effect of the Method of Preparation of Samples From TiC and ZrC on Their High-Temperature Properties"

Kiev, Poroshkovaya Metallurgiya, No 8, Aug 70, pp 63-67

Abstract: A study was made of the strength of samples of different porosity made from TiC and ZrC in the temperature interval 300-3000°K. The presence of "peak" strength is shown at 0.6-0.7 melting temperature, the appearance of which is related to the transition of the materials above the 0.5 melting temperature to the viscous-brittle state. The effect of the method of sample production from TiC and ZrC on their mechanical properties was established. At identical porosity the strength of slip-cast samples was 30% higher than that of pressure cast samples. Therefore, wider use of the slip-casting method in powder metallurgy is recommended.

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Coatings

USSR

UDC 621.74.015:621.744.37

KUMAININ, I. B., BAUMAN, B. V., OREKHOV, A. I., ISAYEVA, T. A., SMOL'KIN, A. A., and ZOTOVA, N. G., Moscow Institute of Steel and Alloys"

Ceramic Antiscorching Coatings for Steel Castings"

Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy, Chernaya Metallurgiya, No 7, 1973, pp 53-56

Abstract: Antiscorching coatings with ceramic type bonding agents were developed on the base of metallophosphates. Starting materials for the production were orthophosphoric acid H_3PO_4, aluminum hydroxide $Al(OH)_3$, and chromium acid Cr_2O_3. The coatings possess high refractoriness and resistance, high thermal stability, and chemical inertia in the working temperature interval. They also have high technological qualities, as good covering power, and high sedimentation stability. The coatings do not contain scarce materials and are not expensive. Results of industrial tests are presented of antiscorching coatings on carbon steel and alloy steels. Comparative results of petrographic analyses of antiscorching coatings are discussed by reference to microsections of the mold and of metal-mold

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USSR

KUMANIN, I. B., et al., Izvestiya Vysshikh Uchebnykh Zavedeniy, Chernaya Metallurgiya, No 7, 1973, pp 53-56

and metal-coating contact zones. Three figures, six bibliographic references.

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1/2 017 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--PAIRED HETEROPOLAR NANOSECOND PULSE GENERATOR -U-

AUTHOR--OREKHOV, A.P.

COUNTRY OF INFO--USSR

SOURCE--LENINGRAD, IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY. PRIBOROSTROYENIYE, NO 2, 1970, PP 10-11

DATE PUBLISHED--------70

SUBJECT AREAS--METHODS AND EQUIPMENT

TOPIC TAGS--PULSE GENERATOR, PULSE SIGNAL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1998/1680 STEP NO--UR/0146/70/000/002/0010/0011

CIRC ACCESSION NO--AT0123504

UNCLASSIFIED

2/2 017 UNCLASSIFIED PROCESSING DATE--30OCT70
CIRC ACCESSION NO--AT0123504
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A PAIRED HETEROPOLAR PULSE GENERATOR IS DESCRIBED WORKING AT A CAPACITIVE LOAD OF UP TO 400 MICROMICROFARADS. PULSE DURATION IS 30 NANOSECONDS, MAXIMUM RECURRENCE FREQUENCY IS 1 MC, AND AMPLITUDE IS APPROXIMATELY 20 V.
FACILITY: NOVOSIBIRSK POLYTECHNIC INSTITUTE.

UNCLASSIFIED

1/2 010 UNCLASSIFIED PROCESSING DATE--11DEC70

TITLE--THE UNIVERSAL LONGITUDINAL DIFFERENTIAL PROTECTION OF SHORT OVERHEAD LINES -U-

AUTHOR-(04)-MEZHALS, L.V., OREKHOV, L.A., FABRIKANT, V.L., SMIRNOVA, T.V.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, ELEKTRICHESTVO, NO 3, 1970, PP 22-26

DATE PUBLISHED-------70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.

TOPIC TAGS--TRANSMISSION LINE, OVERVOLTAGE, CIRCUIT BREAKER, PROTECTIVE EQUIPMENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1999/1198 STEP NO--UR/0105/70/000/003/0022/0026

CIRC ACCESSION NO--AP0123166

UNCLASSIFIED

2/2 010 UNCLASSIFIED

CIRC ACCESSION NO--AP0123166 PROCESSING DATE--11DEC70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A DESCRIPTION AND DIAGRAMS ARE GIVEN OF LONGITUDINAL DIFFERENTIAL PROTECTION SUITABLE BOTH FOR TWO TERMINAL OVERHEAD LINES (OL) OAND FOR OL WITH BRANCH LINES. THE PROTECTION IS ACCOMPLISHED BY A SCHEME WITH CIRUCLATING CURRENTS AND HAS LINEAR CHARACTERISTICS AT EXTERNAL SHORT CIRCUITS. UPON SHORT CIRCUITS IN THE ZONE THE MAXIMUM VOLTAGE ON AUXILIARY OONDUTORS IS LIMITED. RESTRAINT, INTRODUCED INTO PROTECTION SCHEMES, IS PROPORTIONAL TO THE CURRENT OF ITS TERMINAL ON OL. TO PREVENT SPURIOUS OPERATION IN THE CASE WHEN THE CURRENT AT ONE TERMINAL OF THE OL IS LOW OR EQUALS ZERO, BLOCKING IS APPLIED, ACTING THROUGH A DEVICE OF THE GOOD WORKING ORDER CONTROL OF THE AUXILIARY CONDUCTORS.

UNCLASSIFIED

1/2 009 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--EFFECT OF THE TRANSITION LAYER AT THE RUBBER RUBBER INTERFACE ON THE COHESIVE ENERGY DENSITY AND ADHESION BETWEEN LAYERS OF VULCANIZATES

AUTHOR-(04)-OREKHOV, S.V., ZAKHAROV, N.D., KULEZNEV, V.N., DOBADKIN, B.A.

COUNTRY OF INFO--USSR

SOURCE--KOLLOIDNYY ZHURNAL, 1970, VOL 32, NR 2, PP 245-250

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--VULCANIZATE, ADHESION, ELASTOMER COHESION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1993/0397 STEP NO--UR/0069/70/032/002/0245/0250

CIRC ACCESSION NO--APU113315

UNCLASSIFIED

2/2 009 UNCLASSIFIED PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0113315

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ADHESION BETWEEN RUBBERS HAS BEEN STUDIED FOR A NUMBER OF RUBBERS. ADHESION BETWEEN PLIED UP RUBBERS DEPENDS ON THE RATIO OF THEIR MOLAR COHESIVE ENERGIES AND CAN SERVE AS A QUALITATIVE CHARACTERISTIC OF THE THICKNESS OF THE TRANSITION LAYER FORMED DURING BLENDING OR PLYING UP OF RUBBERS. THE ADHESION BETWEEN VULCANIZATE LAYERS OF PLIED UP RUBBERS HAS BEEN DETERMINED BY STATIC AND DYNAMIC METHODS. THE DYNAMIC TEST RESULTS ARE IN QUALITATIVE AGREEMENT WITH THE DATA ON ADHESION OF UNCURED POLYMERS AND CAN BE USED TO ASSESS THE EFFECT OF THE TRANSITION LAYER ON CO VULCANIZATION OF RUBBERS. THE RELATIONSHIP BETWEEN THE COHESIVE ENERGY DENSITY AND THE COMPONENTS RATIO, DETERMINED FOR A NUMBER OF BLENDS, DEPENDS ON THE TRANSITION LAYER THICKNESS AND ON THE DIFFERENCE IN COHESIVE ENERGIES OF THE BLENDED RUBBERS.

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"Unit to Convert Current Strength Variations to Pulse Frequency"

USSR Authors' Certificate No 293293, Cl. H 03 k 3/16, filed 25 Aug 69, published 2 Mar 71 (from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika No 1, Jan 72, Abstract No 1A364P)

Translation: A unit is suggested for converting current strength variations to pulse frequency, using a collector-emitter-coupled blocking oscillator containing a transistorized current-stabilizing stage and a charging capacitor in the emitter circuit of the blocking oscillator's transistor. So that the frequency of the generated pulses can be made dependent on variations in the difference pulse control current, the charging capacitor has connected to it in parallel a resistor and capacitor which are connected in series, with their common outlet connected through a diode to the collector of the subtraction stage transistor, the conductance of which is the reverse of the current-stabilizing stage conductance. 1 illustration.

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Soviet Inventions Illustrated, Section II Electrical, Derwent, UR 0482

225552 CONVERTION OF NUMBERS. The binary code is applied to the master converter. The numbers represent a logarithmic code. The digits are decoded, analysed and the characteristic of an antilogarithm is produced. Logarithm circuits are employed for the determination of a correct mantissa. 23.2.67. as 1136338/26-24. V.A.OREKHOV. A.N.KLIMOV. (17.12.68.) Bul.27/ 29.8.68. Class 42m. Int.Cl. G06f.

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